Claims

1. A combinatorial deposition method characterized in that, in a method of performing thin-film coating on a substrate disposed in a vacuum, two or more substrates can be moved to a deposition position or a cooling position, and sequentially only substrates to be coated are moved to the deposition position and subjected to deposition while substrates at the cooling position are cooled by a cooling mechanism, in one vacuum evacuation process.

2. The combinatorial deposition method according to claim 1, characterized in that deposition is performed for the two or more substrates with different deposition conditions for each substrate.

3. The combinatorial deposition method according to claim 1 or 2, characterized in that the two or more substrates can be moved to the deposition position or the cooling position by a rotation mechanism.

4. The combinatorial deposition method according to any one of claims 1 to 3 characterized in that a water- or liquid nitrogen-cooling mechanism is used.

5. The combinatorial deposition method according to any one of claims 1 to 4 characterized in that deposition is performed by sputter with any one or more of the following deposition conditions: sputter gas pressure, sputter gas type, partial pressure, sputter power value, substrate temperature, distance between the substrate and a target, and sample bias, which are varied for each substrate in one vacuum evacuation process.

6. A combinatorial deposition apparatus characterized in that the apparatus performs thin-film coating onto a substrate disposed in a vacuum, wherein a sample holder can hold two or more substrates, and each substrate can be moved to a deposition position or a cooling position, and sequentially only substrates to be coated are moved to the deposition position and subjected to deposition while substrates at the cooling position are cooled by a cooling mechanism, in one vacuum evacuation process.

7. The combinatorial deposition apparatus according to claim 6, characterized in that deposition is performed for the two or more substrates with different deposition conditions for each substrate.

8. The combinatorial deposition apparatus according to claim 6 or 7 characterized in that the two or more substrates can be moved to the deposition position or the cooling position by a rotation mechanism.

9. The combinatorial deposition apparatus according to any one of claims 6 to 8 characterized in that even if a substrate at the deposition position is heated to 1000°C or more, rise in temperature of substrates at the cooling position can be restrained within 100 K.

10. The combinatorial deposition apparatus according to any one of claims 6 to 9 characterized in that a water- or liquid nitrogen-cooling mechanism is used.

11. The combinatorial deposition apparatus according to any one of claims 6 to 10, characterized in that the apparatus is for deposition by sputtering, and deposition can be performed for two or more substrates with any one or more of the following deposition conditions: sputter gas pressure, sputter gas, partial pressure, sputter power value, substrate temperature, distance between the substrate and target, and sample bias, which are varied for each substrate, in one vacuum evacuation process.

12. The combinatorial deposition apparatus according to claim 11, characterized in that a valve for controlling the sputter gas pressure has a feedback function of changing conductance so that the pressure is equal to a prescribed value.

13. The combinatorial deposition apparatus according to claim 11 or 12, characterized in that the distance between the substrate and the target can be controlled by a straight-line introducing mechanism.

14. The combinatorial deposition apparatus according to any one of claims 6 to 13, characterized in that a turbo molecular pump is provided as a vacuum evacuation mechanism.

15. The combinatorial deposition apparatus according to any one of claims 6 to 14, characterized in that a substrate suited for the Suzuki friction test can be mounted.

16. The combinatorial deposition apparatus according to any one of claims 6 to 15, characterized in that a position of the sample holder or a sputter source is variable, wherein deposition can be performed for a substrate cooled by the cooling mechanism.

17. A sample holder characterized in that the sample holder has a rotation mechanism that can hold two or more samples, wherein it is possible for samples not to be coated to be cooled by a cooling mechanism at a cooling position, and for only samples to be coated to be subjected to temperature control at a deposition position.

18. The sample holder according to claim 17, characterized in that even if a substrate at the deposition position is heated to 1000°C or more, rise in temperature of substrates at the cooling position can be restrained within 100 K.

19. The sample holder according to claim 17 or 18, characterized in that a water- or liquid nitrogen-cooling mechanism is used.